

**Closure Cost Estimate
Clean Harbors Aragonite
Incineration Facility
Aragonite, Utah**

Prepared By:

**Americon, Inc.
Salt Lake City, UT Boulder, CO**

Table of Contents

- I. Executive Summary
- II. Closure Cost Summaries
- III. Closure Costs By Area
- IV. Quotes/Cost Backup
- V. Decontamination Costs by Area and Task
- VI. Decontamination Standards/Analytical Parameters

SECTION I
EXECUTIVE SUMMARY

I. Executive Summary

At the request of Safety-Kleen, Inc, now Clean Harbors Aragonite, LLC, Americon, Inc. has prepared the following closure cost estimate for the Aragonite incineration facility. This estimate is based on the eventual closure of the entire facility by a third party.

This revised closure cost estimate totals \$9,342,872. In Section II of this document, tables are provided which summarize the total closure cost estimates broken out by closure activity and area. In Section III, detailed closure cost estimates are provided for each major process area. These estimates indicate costs by area closure activity. Additionally, a table is provided for each of these major process areas, which tabulates the closure activity total for that process area.

Costs associated with the removal and disposal of waste in storage were calculated by using 2001 gate rates for waste disposal at the Safety-Kleen Deer Park, TX facility. Costs associated with sampling and analysis were calculated by utilizing the sampling and analytical methods for decontamination verification approximating the methodology used in the Northeast Casualty Real Property Clive closure efforts.

This closure cost estimate is based upon the assumption that all areas are full to their permitted capacities, off-site transportation and disposal using commercially available rates, independent third party closure, analytical costs quoted by Utah certified commercial laboratories, and closure certification by a Utah registered Professional Engineer. All cost estimates use available 2001 pricing. Sampling and closure standards for verification of decontamination are assumed to be consistent with those applicable to the Northeast Casualty Real Property Clive incineration facility closure.

SECTION II

CLOSURE COST SUMMARIES

AREA SUMMARY TABLE (includes costs from all areas)	
Activity	Cost
Removal of Waste	\$805,381
Decontamination	\$764,732
Sampling and Analysis	\$181,450
Transportation	\$1,100,943
Treatment and Disposal	\$5,183,492
Subtotal of Closure Costs	\$8,035,998
Engineering Expenses	\$401,802
Certification of Closure	\$55,720
Subtotal of Closure Costs	\$8,493,520
Contingency Allowance	\$849,352
TOTALS	\$9,342,872

**Clean Harbors Aragonite Incineration Facility
Closure Cost Estimate by Area**

Area	Activity	Cost	Are Subtotal
Container Storage	Decontamination	\$164,263	
	Sampling and Analysis	\$42,375	
	Transportation	\$782,250	
	Treatment and Disposal	\$3,041,444	
	Subtotal	\$4,030,332	
	Engineering	\$201,517	
	Certification	\$14,560	
	Subtotal	\$4,246,409	
	Contingency	\$424,641	
	Area Total	\$4,671,050	\$4,671,050
Tank Farm	Waste Removal	\$10,529	
	Decon (including flush, purge)	\$219,516	
	Sampling and Analysis	\$21,700	
	Transportation	\$195,504	
	Treatment and Disposal	\$707,441	
	Subtotal	\$1,154,690	
	Engineering	\$57,735	
	Certification	\$14,560	
	Subtotal	\$1,226,985	
	Contingency	\$122,699	
	Area Total	\$1,349,684	\$1,349,684
Bulk Solids	Waste Removal	\$5,231	
	Decontamination	\$94,825	
	Sampling and Analysis	\$17,250	
	Transportation	\$85,995	
	Treatment and Disposal	\$1,127,308	
	Subtotal	\$1,330,609	

	Engineering	\$66,531	
	Certification	\$8,400	
	Subtotal	\$1,405,540	
	Contingency	\$140,554	
	Area Total	\$1,546,094	\$1,546,094
Sludge Tanks	Waste Removal	\$7,510	
	Decon (including flush)	\$48,532	
	Sampling and Analysis	\$4,500	
	Transportation	\$11,694	
	Treatment and Disposal	\$175,518	
	Subtotal	\$247,754	
	Engineering	\$12,388	
	Certification	\$3,640	
	Subtotal	\$263,782	
	Contingency	\$26,378	
	Area total	\$290,160	\$290,160
Kiln	Removal of Waste Residue	\$782,111	
	Decon (including dissassembly)	\$237,596	
	Sampling and Analysis	\$95,625	
	Transportation	\$25,500	
	Treatment and Disposal	\$131,781	
	Subtotal	\$1,272,613	
	Engineering	\$63,631	
	Certification	\$14,560	
	Subtotal	\$1,350,804	
	Contingency	\$135,080	
	Area Total	\$1,485,884	\$1,485,884
	Total Cost Estimates		\$9,342,872

SECTION III

CLOSURE COSTS BY AREA

Container Storage Area - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Demolition and Removal of Containment System	\$0
2	Removal of Soil	\$0
3	Backfill	\$0
4	Decontamination	\$164,263
5	Sampling and Analysis	\$42,375
6	Monitoring Well Installation	\$0
7	Transportation	\$782,250
8	Treatment and Disposal	\$3,041,444
9	SUBTOTAL OF CLOSURE COSTS	\$4,030,332
10	Engineering Expenses	\$201,517
11	Certification of Closure	\$14,560
12	SUBTOTAL OF CLOSURE COSTS	\$4,246,409
13	Contingency Allowance	\$424,641
14	Landfill Closure	\$0
	TOTALS	\$4,671,050

Container Storage

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task **\$164,263**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Bays 1, 2, 3, 4, 5, 6	= 90 samples
25 samples each E1, E2, E3, E4, E5, E6, E7	= 175
35 samples from breezeway	= <u>35</u>
Total Wipe samples	300

300 wipe sample locations x \$100/wipe = **\$30,000**

B. Rinse Samples (for RCRA confirmation)

1 sample each Bays 1, 2, 3, 4, 5, 6	= 6 samples
2 samples each E1, E2, E3, E4, E5, E6, E7	= 14
3 samples from breezeway	= 3
2 samples from bulk solids pad	= 2
3 samples from slag pad	= 3
1 sample each E-1, E-5, E-4 docks	= 3
2 samples from truck unloading direct burn	= <u>2</u>
Total rinsewater samples	33

33 sample locations x \$375/sample = **\$12,375**

C. Total Sampling Cost

\$30,000 wipe samples + \$12,375 rinse samples = **\$42,375**

7. Transportation of Waste in Storage

Note 1:

Mileage rates based on \$3.00 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

11,847 drums of waste/80 drums per truck = 149 truckloads of drums
149 drum loads x 1,750 miles from Aragonite, UT to Deer Park, TX x \$3.00/mile
= **\$782,250**

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 11,847 drums (55-gal). This capacity includes an equivalent of 213 55-gallon containers for the compressed gas cylinder capacity, and an additional 12 55-gallon containers for the capacity of one direct burn vessel on the direct burn pad, but does not include any capacity from the bulk solids/sludge pad, truck unloading or drive through direct burn stations as the capacity for these units is considered as bulk solids and bulk liquids and is included in the cost estimate for closure of the bulk solids tanks and the tank farm. The total cumulative containment surface area of all of the container storage areas is 115,632 sq.ft.

Note 2:

Disposal rate for material in storage calculated at \$0.44/lb (or \$880/ton) based on a weighted average of gate rates of similar drummed waste at the CH-Deer Park, TX incineration facility.

Note 3:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$700 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of \$1.51/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Waste in Drums

$11,847 \text{ drums} \times 55 \text{ gal/drum} / 7.48 \text{ gal/ft}^3 / 27 \text{ ft}^3/\text{yd} = 3,227 \text{ cu.yd waste}$
 $3,227 \text{ cu.yd waste for disposal} \times 1.00775 \text{ tons/cu.yd} = 3,253 \text{ tons of waste in drums for disposal}$

3,253 tons x \$880/ton disposal cost = **\$2,862,640**

B. Transportation and Disposal of Decontamination Fluid

115,632 sq. ft containment x 1.0 gal/sq. ft decon fluid = 115,632 gallons

115,632 gal x \$1.51/gal disposal cost = **\$174,604**

C. Tank Rental

three 20,000 gallon frac tanks required for two months

3 tanks x \$700/month x 2 months = **\$4,200**

D. Total Treatment and Disposal Cost

\$2,862,640 + \$174,604 + \$4,200 = **\$3,041,444**

9. Sub-Total of Area Closure Costs

\$164,263 + \$42,375 + \$782,250 + \$3,041,444 = **\$4,030,332**

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **\$201,517**

11. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x \$125/hr = **\$12,500**

B. Engineering Certification - Direct costs = **\$2,060**

C. Total Engineering Certification

\$12,500 + \$2,060 = **\$14,560**

12. Sub-Total of Area Closure Costs

\$4,030,332 + \$201,517 + \$14,560 = **\$4,246,409**

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = **\$424,641**

Total Area Closure Cost = \$4,671,050

Tank Farm - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$10,529
2	Tank System Purging	Incl w/decon
3	Flushing Tank and Piping	Incl w/decon
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$219,516
9	Sampling and Analysis	\$21,700
10	Monitoring Well Installation	\$0
11	Transportation	\$195,504
12	Treatment and Disposal	\$707,441
13	SUBTOTAL OF CLOSURE COSTS	\$1,154,690
14	Engineering Expenses	\$57,735
15	Certification of Closure	\$14,560
16	SUBTOTAL OF CLOSURE COSTS	\$1,226,985
17	Contingency Allowance	\$122,699
18	Landfill Closure	\$0
	TOTALS	\$1,349,684

Tank Farm

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity of 461,504 gallons. Additionally, the capacity from the drive through and truck unloading direct burn stations adds four 7500 gallon tankers or 30,000 additional gallons of waste for a total of 491,504 gallons. The tank farm has 18,900 sq.ft. of surface area. This area does not include the drive through and truck unloading direct burn station surface areas as they are included in the container storage area closure.

A. Remove Tank Farm Inventory

Remove 491,504 gallons from storage - 30 mandays

30 mandays x \$25/hr x 8 hrs/day = \$6,000

Equipment - lump sum = \$4,529

Labor plus equipment total = **\$10,529**

2. Tank System Purging

Included in Decontamination Costs

3. Flush Tank and Piping

Included in Decontamination Costs

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities,

including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Tanks and piping will be emptied, flushed, then rinsed prior to dismantling. Tanks and piping will then be cut up for disposal as RCRA waste. Volume of waste based on tank volumes, and pipe system lineal footage.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$219,516**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2.

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3.

The Tank Farm is comprised of four identical containment areas, and two pump houses. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 samples per containment area	= 100 samples
10 samples per pump house	= 20 samples
10 miscellaneous structural steel samples	= 10 samples
12 miscellaneous piping, strainer, pump samples	= <u>12</u> samples
Total wipe samples	142

142 wipe sample locations x \$100/wipe = **\$14,200**

- B. Rinse Samples (for RCRA confirmation)
- | | |
|---|--------------|
| 4 samples each for four containment areas | = 16 samples |
| 2 samples each for two pump houses | = 4 samples |
| Total rinsewater samples | 20 |

20 sample locations x \$375/sample = **\$7,500**

- C. Total Sampling Cost
- \$14,200 wipe samples + \$7,500 rinse samples = **\$21,700**

11. Transportation

Note 1:

Mileage rates based on \$3.00 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

- A. Transportation Of Waste in Drums

It is expected that approximately 34 drums of waste from the tank farm will be removed.

34 drums of waste/80 drums per truck = 1 truckload of drums

1 drum load x 1750 miles from Aragonite, UT to Deer Park, TX x \$3.00/mile = **\$5,250**

- B. Transportation of Bulk Liquid in Storage, and Flush (by Rail tanker)

461,504 gallon tank farm capacity + 30% flush to remove PCBs + 30,000 gallons from direct burn stations = 629,955 gallons total

629,955 gal/20,000 gal per railcar = 32 railcars

32 railcars x \$5,847 per load from Aragonite, UT to Deer Park, TX = **\$187,104**

- C. Transportation of Bulk Waste (tank scrap in roll-off boxes)

16 tanks x 10,000 lb per tank = 160,000 lb steel scrap from tank dismantling

160,000/15,000 per box = 10.5 loads

assume same weight, volume in pipe, pumps and strainers = 10.5 loads

total number of roll-off box loads = 21 boxes

21 roll-off boxes x \$150 per load to transport 25 miles to Grassy Mountain = **\$3,150**

- D. Total Transportation Costs

\$5,250 + \$187,104 + \$3,150 = **\$195,504**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity, plus piping capacity, totaling 461,504 gallons. Additionally, 30,000 gallons of direct burn tanker station capacity will be included as waste to be managed under tank farm closure. The tank farm has 18,900 sq.ft. of surface area.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste, plus 10,000 gallons rinsate generated from rinse of tank interiors prior to dismantling. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Volume of waste for disposal includes permitted capacity of tank system (including pipe) plus 30% by volume to account for flush of system to remove TSCA designation plus 30,000 gallons of the direct burn stations capacity. Three (3) flushes of 10% by volume are assumed, although some flush may be re-used if tested to contain less than 50 ppm PCB.

Note 4:

Disposal prices calculated at \$0.11/lb (\$220/ton) for organic waste, and \$0.147/lb (\$294/ton) for aqueous waste, based on gate rate at CH-Deer Park, TX incineration facility.

Note 5:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$700 per month. Tanks will be placed in suitable containment during use.

Note 6:

Bulk liquid transportation and disposal rate of \$1.51/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Aqueous Waste in Bulk

114,755 gallons capacity + 30 % flush by volume + 15,000 gal from direct burn =
164,182 gal total
 $164,182 \text{ gal} / 7.48 \text{ gal/ft}^3 / 27 \text{ cu ft/cu. yd} = 812.9 \text{ cu. yd.}$
 $812.9 \text{ cu. yd waste for disposal (including flush)} \times 0.843 \text{ tons/cu. yd} = 685.3 \text{ tons}$
for disposal
 $685.3 \text{ tons} \times \$294/\text{ton disposal cost} = \textbf{\$201,478}$

B. Treatment and Disposal of High BTU Waste in Bulk

346,749 gallons capacity + 30% flush by volume + 15,000 gal from direct burn =
465,774 gal

465,774 gal/7.48 gal/ft³/27 cu ft./cu. yd = 2,306.3 cu. yd.

2,306.3 cu. yd waste for disposal (including flush) x 0.843 tons/cu.yd = 1,944.2
tons for disposal

1,944.2 tons x \$220/ton disposal cost = **\$427,724**

C. Treatment and Disposal of Tank and Pipe Scrap Metal

16 tanks at 10,000 per tank plus same weight in pipe, pumps = 320,000 lbs

320,000 lbs/2,000 lb per ton = 160 tons for disposal (landfill)

160 tons x \$190/ton disposal cost = **\$30,400**

D. Transportation and Disposal of Decontamination Fluid

18,900 sq.ft tank farm containment x 1.0 gal./ft² rinsate = 18,900 gal

rinsate generated from tank rinseout prior to dismantling = 10,000 gal

total decontamination fluid volume 28,900 gal

28,900 gal x \$1.51/gal transportation and disposal = **\$43,639**

E. Tank Rental

three 20,000 gallon frac tanks required for two months

3 tanks x \$700/month x 2 months = **\$4,200**

F. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

\$201,478 + \$427,724 + \$30,400 + \$43,639 + \$4,200 = **\$707,441**

13. Subtotal of Closure Costs

\$10,529 + \$219,516 + \$21,700 + \$195,504 + \$707,441 = **\$1,154,690**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **\$57,735**

15. Certification of Closure

A. Engineering Certification - Professional Engineer

100 hours x \$125/hr = **\$12,500**

B. Engineering Certification - Direct Costs = **\$2,060**

C. Total Engineering Certification
 $\$12,500 + \$2,060 = \$14,560$

16. Subtotal of Closure Costs

$\$1,154,690 + \$57,735 + \$14,560 = \$1,226,985$

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$122,699**

Total Area Closure Cost = \$1,349,684

Bulk Solids - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$5,231
2	Tank System Purging	\$0
3	Flushing Tank and Piping	\$0
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$94,825
9	Sampling and Analysis	\$17,250
10	Monitoring Well Installation	\$0
11	Transportation	\$85,995
12	Treatment and Disposal	\$1,127,308
13	SUBTOTAL OF CLOSURE COSTS	\$1,330,609
14	Engineering Expenses	\$66,531
15	Certification of Closure	\$8,400
16	SUBTOTAL OF CLOSURE COSTS	\$1,405,540
17	Contingency Allowance	\$140,554
18	Landfill Closure	\$0
	TOTALS	\$1,546,094

Bulk Solids

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted bulk tank capacity of 229,000 gallons. Also included as bulk solids capacity is the capacity in bulk containers of the bulk solids/sludge pad. This adds an additional 23,760 gallons of waste to be managed for a combined total of 252,760 gallons. The tanks have 7,057 sq.ft. of surface area. This area does not include the bulk solids/sludge pad surface areas as they are included in the container storage area closure.

- A. Remove equivalent of 229,000 gallons of waste from bulk solids tanks and 23,760 gallons from the bulk solids/sludge pad - 20 mandays
20 mandays x \$25/hr x 8 hrs/day = \$4,000
Equipment - lump sum = \$1,231
Labor plus equipment total = **\$5,231**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$94,825**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Bulk Solids Building is comprised of three tanks, and one containment area. These tanks and containment area will be wipe sampled individually. Additionally, core samples will be taken from the concrete walls of the building. Rinsate samples will be taken from tanks, and containment. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples per tank	= 45 samples
5 samples from containment/vault	= <u>5</u> samples
total wipe samples	= 50

50 wipe sample locations x \$100/wipe = **\$5,000**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample per tank	= 3 samples
3 rinse samples from containment	= <u>3</u> samples
total rinse samples	= 6

6 sample locations x \$375/sample = **\$2,250**

C. Concrete Core Samples (for PCB Confirmation)

20 samples per wall	= 80 core samples
20 samples from various floor surfaces	= <u>20</u> core samples
total core samples	= 100

100 core sample locations x \$100/sample = **\$10,000**

D. Total Sampling Cost

\$5,000 wipe samples + \$2,250 rinse samples + \$10,000 core samples = **\$17,250**

11. Transportation

Note 1:

Bulk solids wastes will be bulked into 20 cu yd roll-off boxes, and transported by rail to Deer Park, TX for disposal. A transportation cost of \$1,365 per box is used as per transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

252,760 gallons permitted capacity

252,760 gallons/7.48 gal per cu.ft. = 33,792 cu. ft. waste

33,792 cu. ft. waste/27 cu.ft. per cu.yd. = 1,252 cu.yd.

1,252 cu.yd/20 cu. yd. per roll-off box = 63 roll-off boxes

63 roll-off boxes x \$1,365 per load to transport by rail to Deer Park, TX =

\$85,995

12. Treatment and Disposal

Note 1:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 2:

Disposal of bulk solids removed from inventory is calculated at \$0.327/lb (\$654/ton) based on gate rates at the CH - Deer Park incineration facility.

Note 3:

Walls and ceiling will be rinsed to remove visible dust, and contaminants. Tank liners (metal) will be decontaminated using ultra high pressure water blasting, or other suitable methods. All visible waste residues will be removed.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$700 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of \$1.51 / gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

252,760 gallons/7.48 gal/cu ft/27 cu.ft/cu.yd. = 1,252 cu.yd.

1,252 cu.yd x 1.318 ton per cu.yd. = 1,651 tons for disposal

1,651 tons x \$654/ton disposal cost = **\$1,079,754**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 30,000 gallons

30,000 gal x \$1.51/gal disposal cost (incl. Transportation) = **\$45,300**

C. Tank Rental

two 20,000 gallon frac tanks required for one months

2 tanks x \$700/month x 1 month = **\$1,400**

D. Cost to Pump Fluid to Frac Tanks

Labor - 30 hrs x \$25/hr = \$750

Equipment - lump sum \$104

Total Cost to Pump Fluid \$750 + \$104 = **\$854**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

\$1,079,754 + \$45,300 + \$1,400 + \$854 = **\$1,127,308**

13. Subtotal of Closure Costs

\$5,231 + \$94,825 + \$17,250 + \$85,995 + \$1,127,308 = **\$1,330,609**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **\$66,531**

15. Certification of Closure

A. Engineering Certification - Professional Engineer

60 hours x \$125/hr = **\$7,500**

B. Engineering Certification - Direct Costs = **\$900**

C. Total Engineering Certification

\$7,500 + \$900 = **\$8,400**

16. Subtotal of Closure Costs

$$\text{\$1,330,609} + \text{\$66,531} + \text{\$8,400} = \text{\$1,405,540}$$

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\\$140,554**

Total Area Closure Cost = \\$1,546,094

Sludge Tanks - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$7,510
2	Tank System Purging	\$0
3	Flushing Tank and Piping	\$0
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$48,532
9	Sampling and Analysis	\$4,500
10	Monitoring Well Installation	\$0
11	Transportation	\$11,694
12	Treatment and Disposal	\$175,518
13	SUBTOTAL OF CLOSURE COSTS	\$247,754
14	Engineering Expenses	\$12,388
15	Certification of Closure	\$3,640
16	SUBTOTAL OF CLOSURE COSTS	\$263,782
17	Contingency Allowance	\$26,378
18	Landfill Closure	\$0
	TOTALS	\$290,160

Sludge Tanks

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity of 38,570 gallons. The tanks have 2,903 sq.ft. of surface area.

- A. Remove 38,570 gallons of waste from bulk sludge tanks - 30 mandays
30 mandays x \$25/hr x 8 hrs/day = \$6,000
Equipment - lump sum = \$1,510
Labor plus equipment total = **\$7,510**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$48,532**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of

this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Sludge Tank Area is comprised of two tanks, and one containment vault. The tanks and vault will be wipe sampled individually, with ancillary equipment sampled as necessary. Rinsate samples will be taken from the tanks, and vault. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

5 wipe samples on tanks	= 5 samples
20 wipes on containment vault	= 20 samples
5 samples on ancillary equipment	= 5 samples
Total wipe samples	30

30 wipe sample locations x \$100/wipe = **\$3,000**

B. Rinse Samples (for RCRA confirmation)

2 rinse samples from tank system	= 2 samples
2 samples from vault area	= 2 samples
total samples	4

4 sample locations x \$375/sample = **\$1,500**

C. Total Sampling Cost

\$3,000 wipe samples + \$1,500 rinse samples = **\$4,500**

11. Transportation

Note 1:

Sludge will be bulked into 20,000 gallon rail cars, and transported by rail to Deer Park, TX for disposal. A transportation cost of \$5,847 per tanker is used as per the transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

38,570 gallons permitted capacity

38,570 gallons/20,000 gallons per rail tanker load = 2 rail tanker loads

2 rail tanker loads x \$5,847 per load to Deer Park Texas = **\$11,694**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity and truck unloading direct burn station capacity of 38,570 gallons. The tanks and piping have a surface area of 2903 sq ft with the containment vault having 1,173 sq ft of surface area.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. It is estimated that 1,500 gallons of rinsate will be generated from cleaning vault surfaces, and 14,500 gallons will be generated from cleaning the tank interior due to high solids build-up. This rate is based primarily on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Disposal of bulk sludge removed from inventory is calculated at \$0.39/lb (\$780/ton) based on gate rates at the CH Deer Park incineration facility.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$700 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of \$1.51/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

38,570 gallons permitted capacity/7.48 cu.ft./gal/27 cu.ft./cu.yd. = 191 cu.yd.
191 cu.yd x 1.0135 ton per cu.yd. = 193.6 tons for disposal
193.6 tons x \$780/ton disposal cost = **\$151,008**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 16,000 gallons
16,000 gal x \$1.51/gal disposal cost (incl. Transportation) = **\$24,160**

C. Tank Rental

one 20,000 gallon frac tanks required for one-half month
1 tank x \$700/month x 0.5 months = **\$350**

D. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
 $\$151,008 + \$24,160 + \$350 = \mathbf{\$175,518}$

13. Subtotal of Closure Costs

$\$7,510 + \$48,532 + \$4,500 + \$11,694 + \$175,518 = \mathbf{\$247,754}$

14. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **\$12,388**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
24 hours x \$125/hr = **\$3,000**

B. Engineering Certification - Direct Costs = **\$640**

C. Total Engineering Certification
 $\$3,000 + \$640 = \mathbf{\$3,640}$

16. Subtotal of Closure Costs

$\$247,754 + \$12,388 + \$3,640 = \mathbf{\$263,782}$

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$26,378**

Total Area Closure Cost \$290,160

Kiln - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste Residue	\$782,111
2	Decontamination of the Unit	Incl in decon
3	Disassembly of Ancillary Piping	Incl in decon
4	Demolition and Removal	\$0
5	Removal of Soil	\$0
6	Backfill	\$0
7	Decontamination	\$237,596
8	Sampling and Analysis	\$95,625
9	Monitoring Well Installation	\$0
10	Transportation	\$25,500
11	Treatment and Disposal	\$131,781
12	SUBTOTAL OF CLOSURE COSTS	\$1,272,613
13	Engineering Expenses	\$63,631
14	Certification of Closure	\$14,560
15	SUBTOTAL OF CLOSURE COSTS	\$1,350,804
16	Contingency Allowance	\$135,080
17	Landfill Closure	\$0
	TOTALS	\$1,485,884

Kiln System

Activity Number

1. Inventory Removal

A. Remove and dispose of liquid from scrubber

Scrubber liquid volume made up of:

4 tanks at 14,000 each	= 56,000 gal
1 WESP tank	= <u>1,000 gal</u>
Total scrubber liquid volume	57,000 gal

Labor - 30 mandays x \$25/hr x 8 hrs/day = **\$6,000**

Equipment - lump sum = **\$1,287**

Disposal of Liquid - 57,000 gal x \$1.51/gal (T&D) = **\$86,070**

B. Remove 4,700 cu.yd. of non-liquid waste residues

Non-liquid waste residue volume made up of :

112 boxes slag at 30 yd ³ each (normal operations inventory)	= 3,360 yd ³
18 boxes brick at 30 yd ³ each (from turn-around records)	= 540 yd ³
31 boxes of ash at 20 yd ³ each (normal operations inventory)	= 620 yd ³
9 boxes at 20 yd ³ each from baghouse, spray drier cleanout	= <u>180 yd³</u>
Total volume of non-liquid waste residues (170 boxes)	4,700 yd³

Labor - 300 mandays x \$25/hr x 8 hrs/day = **\$60,000**

Equipment - lump sum **\$25,884**

C. Dispose of 4,700 cu.yd of non-liquid waste (volume estimated above)

4,700 cu.yd x 0.675 tons per cu.yd = 3,173 tons.

3,173 tons x \$190/ton disposal cost = **\$602,870**

D. Total Inventory Removal and Treatment Cost

$\$6,000 + \$1,287 + \$86,070 + \$60,000 + \$25,884 + \$602,870 = \mathbf{\$782,111}$

7. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$237,596**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall. For this task however, the labor and equipment charges for the scrubber liquid and non-liquid residue removal are already included in Activities 1. A. and 1.B. above and should deducted from the calculation using the numbers in Section V in order to avoid duplicating the cost, i.e., 443 mandays/1149 mandays x \$857,903 = \$330,767; \$330,767 - \$6,000 - \$1,287 - \$60,000 - \$25,884 = 237,596.

8. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

Due to the large surface area of the units comprising the Kiln Area, several units, and corresponding containment areas will be wipe sampled. Sample quantities by area location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 each for kiln and afterburner feed skids, slag discharge, "A" damper	= 100
10 each for the 8 kiln area units	= 80
10 for each of 6 kiln area containment area	= 60
30 for direct burn area	= 30
30 for random structural wipes in area	= <u>30</u>
Total number of wipe samples from Kiln area	300

300 wipe sample locations x \$100/wipe = **\$30,000**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample from each of the 6 containment berms in kiln area = 6

1 rinse sample from each of the 8 kiln area units	= 8
1 rinse from the direct burn area containment	= <u>1</u>
Total number of aqueous samples from kiln area	15

15 sample locations x \$375/sample = **\$5,625**

C. Non-aqueous Samples (concrete cores, brick samples)

200 brick samples from kiln, "a" damper	= 200
150 brick samples from SCC	= 150
20 samples from deslagger	= 20
20 samples from each of 5 pant leg sections	= 100
80 samples from spray drier	= 80
20 samples from accumulation areas	= 20
20 from parking area	= 20
10 random samples from kiln area	= <u>10</u>
Total non-aqueous samples	600

600 samples x \$100/sample = **\$60,000**

D. Total Sampling Cost

\$30,000 wipe samples + \$5,625 rinse samples + \$60,000 non-aqueous samples =
\$95,625

10. Transportation

A. Transportation of Bulk Liquids (scrubber water)
included in Task 1 - Inventory Removal

B. Transportation of Bulk Waste Residue (ash, brick)
170 debris boxes (from inventory) x \$150/ box to Grassy Mtn, UT = **\$25,500**

C. Total Cost of Transportation of Waste
\$25,500

11. Treatment and Disposal

Note 1:

Brick removal labor is included in the costs for inventory removal. These costs are detailed in Section V of this document, and total \$93,384.

Note 2:

An area of 82,899 sq ft require decontamination. Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$700 per month. Tanks will be placed in suitable containment during use.

Note 4:

Bulk liquid transportation and disposal rate of \$1.51/gallon based on bulk transport to Deer Park, TX by rail in a 20,000 gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage
included in Task 1 - Inventory Removal

B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated - 82,899 gallons
82,899 gal x \$1.51/gal disposal cost (incl. Transportation) = **\$125,177**

C. Tank Rental
four 20,000 gallon frac tanks required for two months
4 tanks x \$700/month x 2 months = **\$5,600**

D. Cost to Pump Liquid to Frac Tank
labor- 4 mandays x \$25/hr x 8 hrs/day = **\$800**
equipment - lump sum **\$204**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
 $\$125,177 + \$5,600 + \$800 + \$204 = \mathbf{\$131,781}$

12. Subtotal of Closure Costs

$$\$782,111 + \$237,596 + \$95,625 + \$25,500 + \$131,781 = \mathbf{\$1,272,613}$$

13. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **\$63,631**

14. Certification of Closure

A. Engineering Certification - Professional Engineer
96 hours x \$125/hr = **\$12,000**

B. Engineering Certification - Direct Costs = **\$2,560**

C. Total Engineering Certification
 $\$12,000 + \$2,560 = \mathbf{\$14,560}$

15. Subtotal of Closure Costs

$\$1,272,613 + \$63,631 + \$14,560 = \mathbf{\$1,350,804}$

16. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$135,080**

Total Area Closure Cost = \$1,485,884

SECTION IV

QUOTES/COST BACKUP

2001 Transportation and Disposal Rates

1. Bulk Liquid Waste by Rail Tanker Car to Deer Park, Texas

Cost to transload from Aragonite to Clive 4 tankers, \$300/load:	\$1,200
Cost to move by rail tanker, Clive UT to Deer Park, TX:	\$4,584
Tank car rental cost \$400/month (1 month round trip):	<u>\$400</u>
Total cost for one load:	\$5,847

20,000 gallon capacity tankers/\$5,847	
Cost per gallon for rail transport	\$0.29/gal
Cost per gallon for water disposal (\$0.147/lb x 8.3 lb/gal)	<u>\$1.22/gal</u>
Total Transportation and Disposal Cost - Aqueous Waste	\$1.51/gal

2. Roll-Off Boxes by Rail Car to Deer Park, Texas

Cost to Transload from Aragonite to Clive (per box)	\$150/box
Cost to Load onto rail car	\$ 75/box
Cost to Transport by rail from Clive, UT to Deer Park, TX	\$1,065/box
Cost to Unload box at Deer Park plant	<u>\$ 75/box</u>
Total Transportation Cost by Rail for Solids in Roll-offs	\$1,365/box

3. Roll-Off Boxes by Truck to Grassy Mountain

Truck Cost of \$600/day, 4 loads per day	\$150/box
--	------------------

Average Incineration Prices utilized in Estimates:

Bulk Water:	\$0.147/lb
Bulk Organics:	\$0.110/lb
Bulk Solids:	\$0.327/lb
Bulk Debris:	\$0.378/lb
Sludge:	\$0.397/lb
Drums:	

Using a weighted average of the various waste types \$0.44/lb

Average landfill disposal prices utilized in estimates: \$190/ton

Over the road transportation cost: \$3.00/loaded mile
Road mileage to Deer Park, Texas: 1,750 miles

Insert Severn Trent Information (2 pages)

Insert Table Comparing Analytical Costs

Insert Union Pacific Quotes (2 pages)

Insert Decontamination Fluid Generation Table

SECTION V

DECONTAMINATION COSTS BY AREA AND TASK

Section V Decontamination Costs by Area and Task

Note:

The costs detailed in this section represent Engineering Estimates for the tasks described. The tasks, and associated durations, equipment, and project management requirements were determined after a facility walk through with compliance personnel, an examination of relevant closure and permit documents, and follow-up discussions. Some assumptions were made with respect to decontamination of surfaces and equipment with which Americon has specific experience. Recent experience includes closure of the Clive Incineration Facility, which has very similar process units, storage areas, and infrastructure. This facility is also within the Utah Department of Environmental Quality's jurisdiction, so consistent closure standards were assumed (see Section VI).

Pricing is representative of that generally available in the industry, and would currently be available from Americon, Inc. for a project of similar scope, complexity and duration

**Clean Harbors Aragonite
Plant Decontamination Task Duration Summary**

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
1. Container Storage				
	Drum Storage Buildings (2)			
	Dismantle drum storage racks	10		
	Wash ceilings (concrete)	30		
	Wash Walls (concrete)	40		
	Wash front loading bays (both buildings)	10		
	Wash interior storage cells	28		
	Sample	8		
			126	
	Container Processing Area			
	Remove area equipment	4		
	Wash ceiling	8		
	Wash walls	12		
	Wash floor	8		
	Dismantle, wash decant area	12		
	Sample	4		
			48	
	Dock/Breezeway			
	Remove elevator/rollers	10		
	Lower level hoist decontamination	8		
	Sump cleanout	2		
	Dock wash	8		
	Breezeway Wash	6		
	Electrical isolation of conveyors	1		
	Ceiling wash	6		

	Miscellaneous demolition	3		
	Sample	2		
			46	
	Container Storage Subtotal			220
2. Tank Farm				
	Sample Station			
	Wash structure	3		
			3	
	Unload Building			
	Triple rinse pumps, piping	3		
	Isolate, pull pumps	4		
	Isolate, pull piping	6		
	Clean containment	4		
	Sample	2		
			19	
	Waste Tanks			
	Triple rinse tanks, piping	6		
	Isolate piping	3		
	Pull piping	2		
	Purge tanks	8		
	Muck out interior	40		
	Remove exterior structural	20		
	Remove tanks	8		
	Cut-up tanks for disposal	45		
	Clean containment	9		
			141	
	Pump Houses (2)			

	Triple rinse pumps, piping	4		
	Isolate, pull pumps	10		
	Isolate, pull piping	12		
	Clean containment	10		
	Sample	2		
			38	
	Blend Tanks			
	Triple rinse tanks, piping	3		
	Isolate, purge	5		
	Isolate, remove pumps	2		
	Remove piping	3		
	Muck out interior	8		
	Remove mixers (sectioned)	4		
	Top valves and piping	2		
	Remove exterior structural steel	6		
	Pull tanks	4		
	Cut-up tanks	10		
	Remove unload rack piping	2		
	Containment	3		
	Purge, pull O/H lines to incin feed rack	7		
			59	
	Carbon Adsorber			
	Remove packing for disposal	6		
	Remove tanks, piping, for disposal	8		
	Sample	2		
			16	
	Direct Burn Area			
	Purge piping, pull	4		
	Clean containment	4		

	Pull unloading pipes	2		
	Pull pumps	2		
	Wash bay	4		
	Sample	2		
			18	
	Tank Farm, Piping Subtotal			294
3. Bulk Solids				
	Bulk Solids Building			
	Rinse down ceiling, upper walls	10		
	Clean walls	28		
	Clean tanks	35		
	Sample	8		
			81	
	Shredder Area			
	Clean hopper, shelf	8		
	disassemble, clean shredder	8		
	sample	2		
			18	
	Drag Conveyor			
	Dissemble conveyor	6		
	Clean conveyor interior	6		
	Clean hopper, knife gates	6		
	Sample	2		
			20	
	Clean hpu mains	2		
	Pull small lines	2		
	Drain hpus, isolate	2		

	Isolate electrical	2		
			8	
	Bulk Solids Subtotal			127
4. Sludge Tanks				
	Sludge Tank – Small			
	Triple rinse	2		
	Muck out interior	6		
	Remove valves and piping	2		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	6		
	sample	2		
			26	
	Sludge Tank - Large			
	Triple rinse	3		
	Muck out interior	6		
	Wash interior	6		
	Remove valves and piping	4		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	10		
	Sample	2		
			39	
	Sludge Tanks Subtotal			65
5. Incineration Train				

	Deslagger			
	Pull out	2		
	Isolate, disconnect	4		
	Open housing, pull headgear	4		
	Pull head pulley	4		
	Pull belt, dispose	3		
	Cut-up shell for disposal	20		
	Gross area decontamination	4		
	Surrounding sump area decontamination	4		
	sample	2		
			47	
	Kiln Exterior			
	Clean exterior kiln drive	2		
	Clean ring gear	2		
	Clean from discharge to deslagger	2		
	Remove piping	16		
	Pull kiln face feed points	6		
			28	
	Kiln Interior			
	Remove brick, containerize	35		
	Clean interior	8		
	Sample	2		
			45	
	SCC			
	Clean area exterior	2		
	Remove feed piping	6		
	Remove burners	15		
	Remove SCC exterior sheathing	20		
	Push in SCC brick	35		

	Muck out brick into rolloffs	20		
	Clean structure	8		
	Sample	2		
			108	
	Kiln Feed Piping			
	Isolate, purge	2		
	Pull, cut piping	10		
			12	
	Ducting from SCC to Saturator			
	Cut refractory to release joints	8		
	Crane out ducts, including thermal vent	4		
	Remove duct refractory	20		
	Wash duct to scrap	4		
	Sample	4		
			40	
	Saturator			
	Pull packing, containerize	2		
	Pump solids, muck out bottom	4		
	Scaffold interior	4		
	Sample	2		
			12	
	Scrubber			
	Pull packing, muck out bottom	8		
	Scaffold interior	4		
	Clean interior	10		
	Sample	2		
			24	
	Spray Dryer			

	Remove residue	6		
	Isolate, remove piping	6		
	Remove, clean ducting	10		
	Clean discharge area	4		
	Sample	2		
			28	
	Baghouse			
	Clean inlet, outlet duct	6		
	Remove bags, cages	8		
	Clean/remove screw conveyors	12		
	Clean interior	10		
	Sample	2		
			38	
	Baghouse Residue Loadout Bldg			
	Clean conveyors	8		
	Clean loadout hoppers	4		
	Clean building structure	6		
	Clean containment	6		
	Sample	2		
			26	
	ESP			
	Isolate	1		
	Clean inlet, discharge ducting	4		
	Clean interior	6		
	Sample	2		
			13	
	ID Fans, Stack Inlet Ducting			
	Clean ID #1 fan inlet	2		

	Clean transition to ID fan # 2	2		
	Clean fan #2, outlet to sack	2		
	Clean bottom section of stack	2		
			8	
	Stack			
	Check condition of interior	1		
	De-erect	2		
	Clean interior	2		
	Sample	1		
			6	
	pH Adjustment Tanks			
	Isolate, drain	2		
	Clean, rinse	4		
	Remove piping, pumps	2		
			8	
	Incineration System Subtotal			443
	Area Totals	1149	1149	1149

Decontamination Equipment and Supplies

Unit	Unit Qty	Item Description	Item Qty	Rate	Extension
		General Equipment			
Week	19	Pressure Washers w/Trailers	4	\$380	\$28,880
Week	9	Sand Blasting	2	\$420	\$7560
Week	19	High Reach Fork Lift	1	\$920	\$17,480
Week	19	Fork Lifts (5,000 lbs)	2	\$220	\$8,360
Week	19	Shooting Boom Lift	1	\$1,075	\$20,425
Month	3	Vactor Truck (up to 176 hrs/mo)	1	\$8,000	\$24,000
Week	12	Vacuum Boxes	2	\$375	\$9,000
Hour	200	50-Ton Crane w/operator	1	\$60	\$12,000
Hour	200	100-Ton Crane w/operator	1	\$90	\$18,000
Week	18	Welding/Cutting and Supplies	2	\$175	\$6,300
Week	19	Trailers for Transporting Equipment on-site	1	\$60	\$1,140
Week	19	Storage Trailers for Equipment on-site	2	\$55	\$2,090
Month	3	Hydroblaster, 30,000 psi	1	\$10,000	\$30,000
LS	1	Mob, Demob, Permits and Misc Expenses	1	\$2,000	\$2,000
Week	19	Air Compressors	2	\$305	\$11,590
Week	19	Trucks	2	\$275	\$10,450
Week	12	Koppus Blowers	2	\$60	1,440
Week	19	Scaffolding	1	\$150	\$2,850
		Subtotal			\$213,565
		Supplies			
Manday	1	PPE	1,400	\$20.00	\$28,000
Drums	20	Drums of Detergents	1	\$500	\$10,000
Week	18	Small Tools	1	\$200	\$3,600
Week	19	Sampling Supplies	1	\$125.00	\$2,375
Bag	1	Bag Grit for Sand Blasting	700	\$8	\$5,600
Roll	1	Absorbent Mats	40	\$110	\$4,400
Roll	1	Plastic	200	\$60	\$12,000
Case	1	Duct Tape	20	\$125	\$2,500
Each	1	Drums	250	\$30	\$7,500
Roll	1	Drum Liner	50	\$70	\$3,500
		Subtotal			\$79,475

		Total			\$293,040
--	--	-------	--	--	-----------

Decontamination Project Administration

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension
		Project Management Personnel			
Hourly	700	Project Manager	1	\$65	\$45,500
Hourly	900	Field Supervisor	1	\$32	\$28,800
Hourly	900	Quality Assurance Officer	1	\$30	\$27,000
Hourly	500	Clerical	1	\$15	\$7,500
		Subtotal			\$108,800
		Administrative Equipment/Supplies			
Month	6	Project Office	1	\$800	\$4,800
Month	6	Fax, Copier	1	\$250	\$1,500
Month	6	Phone	1	\$200	\$1,200
Week	18	Postage	1	\$30	\$540
Month	6	Utilities	2	\$100	\$1,200
Month	6	Supplies	1	\$250	\$1,500
Month	6	Cleaning and Disposal	1	\$250	\$1,500
Day	80	PPE for Administrative Personnel	2	\$20	\$3,200
Week	18	Administrative Truck	1	\$225	\$4,050
		Subtotal			\$19,490
		Incidental Costs			
Each	1	Travel	20	\$500	\$10,000
Day	80	Subsistence	4	\$75	\$24,000
		Subtotal			\$34,000
		Total			\$162,290

Decontamination Cost Summary

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension	Totals
		Direct Costs				
Mandays	1	Labor				
		Direct Labor Cost	1149	\$280	\$321,720	
						\$321,720
		Equipment				
		Direct Equipment			\$213,565	
		Supplies			\$79,475	
						\$293,040
		Project Overhead				
		Project Management Personnel			\$108,800	
		Admin Equipment/Supplies			\$19,490	
		Incidental Costs			\$34,000	
						\$162,290
LS	1	Mobilization	1	\$30,000	\$30,000	
LS	1	Demobilization	1	\$10,000	\$10,000	
						\$40,000
LS	5%	Contingency	1	\$817,050	\$40,853	
						\$40,853
		Total				\$857,903

SECTION VI

**DECONTAMINATION STANDARDS/ANALYTICAL
PARAMETERS**

Table I-1.3
Decontamination Rinse Water Analysis

<u>Parameters</u>	<u>Maximum Concentration Increase*</u>
(T=Total Metals)	(mg/l)
Oil and Grease	15.0
Phenols	0.2
Arsenic - T	0.1
Barium - T	5.0
Cadmium - T	0.03
Copper - T	1.0
Lead - T	0.1
Mercury- T	0.005
Selenium - T	0.05
Silver - T	0.1
Total Organic Halides	0.5
Total Organic Carbon	40.0
Cyanides	0.2

* The values given are the maximum allowable increase in a parameter, over the level that exists in the final rinse water prior to use. This "prior existing level" shall be established as the average of at least three (3) analyses of the rinsewater, plus three (3) standard deviations. These analyses will be made at the time of closure, when a water source is known.

Table I-1.3 (Continued)
Decontamination Rinse Water Analysis

NOTE:

1. Many different waste codes will be handled through-out the Clive facility. Over its operating lifetime, it is likely that each unit will eventually handle practically all waste codes actually received, either directly or through the "mixture" and "derived from" rules. From a regulatory viewpoint, then, the potential variety of contamination at all units will be identical. Therefore, only one list of parameters will be considered. This list will be used for all waste management units throughout the facility.

The parameters listed in Table I-1.3 are intended to represent the contaminants likely to be present in the highest levels, and to give an indication of potentially toxic constituents. It must be noted that many of the constituents of concern - the organics, especially the chlorinated organics - are volatile and will likely vaporize for the most part during the cleaning process itself. The loss of these relatively small amounts of materials is considered as unavoidable and non-threatening to the environment or the general public. Any remaining heavy, residual organics will be included by the analyses for Oil and Grease, TOC, and/or TOX. All of these parameters will detect general contamination to relatively small values.

It must also be remembered that the decontamination procedures listed in the application apply only to surfaces which are relatively impermeable (designated as "hard surfaces"). They will be used only for metallic items, such as tanks, and concrete. Any porous material, such as soils are intended for landfilling or other EPA/State approved treatment technologies. For most of the items to be decontaminated, a visual inspection will be as useful as actual analysis of the wash; however, to provide a quantitative, objective measure of contamination (or the absence thereof), and a historical record, these analyses will be conducted as described previously for "hard surfaces."

Wide ranging analyses for specific organic chemicals, such as that achieved by GC/MS work, will not provide significantly more useful information. In addition, these analyses take considerable periods of time, during which site conditions would have changed markedly (due to continuing exposure to the elements).

The parameters chosen will adequately sample for all constituents of real concern, or for indicators of those constituents.